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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Anders Johansson

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EXAMINER

BRUTUS, JOEL F

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/587,490	Applicant(s) JOHANSSON ET AL.	
	Examiner JOEL F. BRUTUS	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 October 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-30 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>7/27/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Objections

1. Claims 1-30 are objected to because of the following informalities: Applicant includes numerals in the claims, it is not clear whether Applicant refers to the drawing with the numerals. For purpose of examination the numerals are not given any patentable weight.

In claim 1, the word "c h a r a c t e r i z e d" should be the same font as the other words. Appropriate correction is required.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-30 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claims 1 and 30, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Regarding claims 2-29, they are rejected because they depend on claim 1.

Claim Rejections - 35 USC § 101

4. Claim 30 is rejected under 35 U.S.C. 101 because the claimed invention is not supported by either method steps or usage of the method.

Claim 30 is also rejected under 35 U.S.C. 112, first paragraph. Specifically, since the claimed invention is not supported by either a method steps or asserted utility or a well established utility for the reasons set forth above, one skilled in the art clearly would not know how to use the claimed invention.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-6, 8-11, 13, 15-21, 23-27, and 29-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Backman et al (US Pat: 6,624,890) in view of Janes et al (US Pat: 5,280,788) and further in view of Cane et al (Pub. No.: US 2001/0056237 A1).

Regarding claims 1-6, 8-11, 13, 15-21, 23-27, and 29-30, Backman et al teaches polarized light to measure properties of tissue, fiber optic system for delivery and collection of light that can be used to measure tissue within human body that is pertinent to the claimed invention. Backman et al further teaches a system that delivers collimated polarized light on tissue and separate two orthogonal polarizations of

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backscattered light [see column 5 lines 32-24]; fiber, lens, polarizer with linear polarization, a broadband polarizer linearly polarizes the beam [see column 5 lines 43-46]; optical fibers, multi channel spectroscope, spectra of components measured in range of 300 to 1200 nm; 400 to 900 nm [see column 5 lines 55-58]; in a single layer measurement component of the backscattered light with the same state polarization as the incoming light [see column 6 lines 28-30]; determining optical thickness of tissue layers such as epithelium, optical spectral region hemoglobin is known; hemoglobin absorption in the second band layer are seen in the spectrum [see column 6 lines 35-60].

Backman et al also teaches that optical fibers are used to deliver and collect light; fiber probe that can be inserted in an endoscope, polarizer and analyzer that can be placed at the tip of the probe [see column 8 lines 10-20]. The probe system includes a broad band light source that is optically coupled to a delivery fiber extending through probe; light from the source is directed through a polarizer at the distal end of probe; and data can be processed by a computer and display [see column 8 lines 24-38, fig 7]. Light extending fiber [see column 8 lines 61-62]; delivering fiber extending through probe [see column 8 lines 22-26]. Backman et al teaches that beneath epithelium there are layers of relatively acellular connective and muscular tissues [see column 2 lines 26-28]; and cartilage is a connective tissue.

Backman et al doesn't teach generating reference light.

However, Janes et al teaches one or more optical fibers can be employed to deliver radiation to the divergent channel and to collect light emitted by the tissue. The

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collected light is then directed to a spectroscopic analyzer which compares information [see column 2 lines 6568]. The analyzer compares the light emitted by the tissue with a reference signal to provide diagnostic information of interest. The reference signal can be a single spectrum of adjacent healthy tissue, or can be drawn from a standardized database [see column 3 lines 25-10]; various types of lights are emitted by the tissue in response to illumination at different wavelengths, infrared wavelengths can be employed [see column 3 lines 20-25]. Fiber bundle coupled to a distal tip of a needle or probe; groove extending through distal tip [see column 3 lines 20-30]; a controller, diagnostic probe, detector, computer [see fig 14].

Backman et al doesn't teach comparing means; usage of white light.

However, Cane et al teaches a comparator that may receive signals relating to the intensity of light remitted in the red, yellow and blue regions of spectrum and of remitted white light [see 0197]. Proportion or intensity is controlled by control means to spatial correlation of input images [see 0131]; Means provided for monitoring the intensity of the light remitted from a plurality of lines a two dimensional array of points [see 0150]; method of measuring the thickness of papillary dermis by shining infrared light at two wavelengths on area of the skin [see 0177]. The invention further includes a method of mapping the papillary surface of an area of the dermis; illuminate the area with light and monitor the intensity of the light remitted wavelength sufficiently far into the infrared, two wavelengths with at least one is in excess 600 nm [see 0031]. Layer thickness may still be measured by obtaining two red or infrared images, each at different wavelength [see 0141]. Cane et al further teaches using white light [see 0128];

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a processor to take signal proportional to the collagen concentration and to use signal as a measure of altitude to generate a relief map for display [see 0196]. Detector in N dimensional search space [see 0097].

Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to combine these references; for the purpose of evaluating the areas being examined for a more accurate diagnosis; the fibers at the probe extension would focus lights to the areas. One with ordinary skill in the art would be motivated to determine the thickness of tissue with measured intensities of backscattered reference light and measured light; for the purpose of providing an accurate diagnosis with greater precision. The difference in absorption of tissue components would be seen with the utilization of colored images; for the purpose of increasing visualization. Cane et al disclose monitoring intensity of light from a plurality of lines and two dimensional array [see 0150]. An artisan would use a two dimensional intensity detector; for the purpose of increasing the system efficiency.

7. Claims 7, 12, 22, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Backman et al (US Pat: 6,624,890) in view of Janes et al (US Pat: 5,280,788) and further in view of Cane et al (Pub. No.: US 2001/0056237 A1) as applied to claim 1 above and further in view of Kaneko et al (US Pat: 5,305,759).

Regarding claims 7, 12, 22, and 28, all other limitations are taught as set forth by the above combination.

The above combination doesn't teach multiplexing.

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However, Kaneko et al teach multiplexing reflecting lights [see column 35 lines 30-40];

Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to combine these references by using multiplexing; for the purpose of allowing multiple analog message signals or digital data streams to be combined into one signal over a shared medium; to reduce cost by sharing an expensive resource.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Backman et al (US Pat: 6,624,890) in view of Janes et al (US Pat: 5,280,788) and further in view of Cane et al (Pub. No.: US 2001/0056237 A1) as applied to claim 1 above and further in view of Richards-Kortum et al (US Pat: 6,370,422).

Regarding claim 14, all other limitations are taught as set forth by the above combination.

The above combination doesn't teach cartilage and bone.

However, Richards-Kortum et al teaches using light reflection to measure different properties of tissue samples including bone, cartilage [see column 9 lines 7-12].

Therefore, it would have been obvious to one with ordinary skill in the art at the time the invention was made to combine these references; for the purpose of diagnosing a joint with great accuracy, Thereby evaluating the joint to prescribe the best possible treatment available.

Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOEL F. BRUTUS whose telephone number is (571)270-3847. The examiner can normally be reached on Mon-Fri 7:30 AM to 5:00 PM (Off alternative Fri).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/J. F. B./
Examiner, Art Unit 3768

/Long V Le/
Supervisory Patent Examiner, Art Unit 3768